



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

12

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/030,870

10/19/2001

Robert Boesnecker

32860-000181

8899

30596 7590 05/14/2007
HARNES, DICKEY & PIERCE, P.L.C.
P.O.BOX 8910
RESTON, VA 20195

EXAMINER

FAULK, DEVONA E

ART UNIT	PAPER NUMBER
----------	--------------

2615

MAIL DATE	DELIVERY MODE
-----------	---------------

05/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/030,870

Applicant(s)

BOESNECKER, ROBERT

Examiner

Devona E. Faulk

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 2/15/2007 have been fully considered but they are not persuasive.
2. The applicant first asserts that the examiner has rejected using the same two references, Makivirta and Azima and that the pre-appeal brief review board agreed that it would not have been obvious to combine Makivirta and Azima. The examiner asserts that the pre-appeal conference decision only states that the rejection will be withdrawn. It was the suggestion of the pre-appeal review conference attendees that the examiner use the same references but reversing the order.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). As asserted in the rejection, prior art Makivirta discloses a method for operation of a loudspeaker, comprising: measuring the acoustic frequency response of the loudspeaker (64, filter/correlator, column 5, lines 25-26); determining a frequency curve based on the measured acoustic frequency response (4, wideband filter, column 5, lines 16-); determining an inverse frequency curve to the frequency curve (column 1, lines 50-55;

Art Unit: 2615

column 5, lines 16-26); simulating the inverse frequency curve in a filter device as a transfer function of the filter device (column 5, lines 16-26); and in an operating mode, compensating for the frequency response of the loudspeaker by the filter device, which is connected between the sound source and the loudspeaker based upon the transfer function (Figure 2B; column 3, lines 15-24)). Makivirta discloses that the speaker is a one-way loudspeaker but fails to disclose that the loudspeaker is a flat panel loudspeaker.

The examiner asserted that prior art Azima disclosed a one-way loudspeaker, a flat-panel loudspeaker, in which at least one oscillating coil (9 transducer) is mounted on a surface in the form of a plate (sound radiating panel) having predetermined characteristics (Figure 3, obvious that the plate has some predetermined characteristics), comprising: stimulating at least one coil to oscillate electrically by a sound source (column 5, lines 15-17) and emitting sound by the surface stimulated to oscillate mechanically by the oscillating coil.

The motivation used by the examiner is that it would have been obvious to modify Makivirta's method of correcting by using a flat panel loudspeaker as the one-way loudspeaker in order to Azima to produce a more superior output over that of a conventional speaker (Azima, column 4, lines 61-62). The examiner asserts that the motivation clearly came from prior art Azima and not hindsight.

Regarding the applicant's assertion that Makivirta refers to a sound reproduction system with a conventional membrane type loudspeaker, the examiner asserts the

Art Unit: 2615

Makivirta discloses applying the method to equalizing the frequency response of a one-way loudspeaker (column 6, lines 27-36).

Regarding the applicant's assertion that Azima teaches to optimize the acoustic output by placing a transducer on or in a panel at a predetermined location; that the sound output is best if the position of the transducer is calculated as described in patent application 09/011,773 and 09/011831 and that Azima is silent about the details of the correction method performed by the filter/correlator driver by a vibration transducer (63) during loudspeaker use of the panel, the examiner asserts that Azima was not cited for these features. Azima was cited only for disclosing a flat panel loudspeaker. The reference to Azima's filter/correlator in claims 2 and 5 was to teach of digital filters.

The examiner is maintaining the rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-6,8,10 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Makivirta et al. (EP 0567 061) in view of Azima et al. (US Patent 6,198,831).

Regarding **claim 1**, Makivirta discloses a method for operation of a loudspeaker,

Art Unit: 2615

comprising:

measuring the acoustic frequency response of the loudspeaker (64, filter/correlator, column 5, lines 25-26).

determining a frequency curve based on the measured acoustic frequency response (4, wideband filter, column 5, lines 16-);

determining an inverse frequency curve to the frequency curve (column 1, lines 50-55; column 5, lines 16-26);

simulating the inverse frequency curve in a filter device as a transfer function of the filter device (column 5, lines 16-26);

and in an operating mode, compensating for the frequency response of the loudspeaker by the filter device, which is connected between the sound source and the loudspeaker based upon the transfer function (Figure 2B; column 3, lines 15-24)).

Makivirta discloses that the speaker is a one-way loudspeaker but fails to disclose that the loudspeaker is a flat panel loudspeaker.

Azima discloses a one-way loudspeaker, a flat-panel loudspeaker, in which at least one oscillating coil (9 transducer) is mounted on a surface in the form of a plate (sound radiating panel) having predetermined characteristics (Figure 3, obvious that the plate has some predetermined characteristics), comprising: stimulating at least one coil to oscillate electrically by a sound source (column 5, lines 15-17) and emitting sound by the surface stimulated to oscillate mechanically by the oscillating coil.

It would have been obvious to modify Makivirta's method of correcting by using a flat panel loudspeaker as the one-way loudspeaker in order to Azima to produce a more superior output over that of a conventional speaker (Azima, column 4, lines 61-62).

Regarding **claim 4**, Makivirta discloses a loudspeaker and a filter device for the sound signals, connected upstream of the at least one oscillation coil, wherein a transfer function of the filter device is the inverse of a frequency response of the loudspeaker ((column 5, lines 16-26; Figure 2B; column 3, lines 15-24)).

Makivirta discloses that the speaker is a one-way loudspeaker but fails to disclose that the loudspeaker is a flat panel loudspeaker.

Azima discloses a one-way loudspeaker, a flat-panel loudspeaker, in which at least one oscillating coil (9 transducer) is mounted on a surface in the form of a plate (sound radiating panel) having predetermined characteristics (Figure 3, obvious that the plate has some predetermined characteristics), comprising: stimulating at least one coil to oscillate electrically by a sound source (column 5, lines 15-17) and emitting sound by the surface stimulated to oscillate mechanically by the oscillating coil.

It would have been obvious to modify Makivirta's method of correcting by using a flat panel loudspeaker as the one-way loudspeaker in order to Azima to produce a more superior output over that of a conventional speaker (Azima, column 4, lines 61-62).

Regarding **claims 2 and 5**, Makivirta as modified by Azima discloses wherein digital filters stimulate the transfer function of the filter device and wherein the filter device is in the form of a digital filter. Makivirta's apparatus is to be implemented with FIR filter (column 4, lines 50-53). This implies that any filter processing that is done is

digital. Thus it would have been obvious to one of ordinary skill in the art to have the transfer function simulated by digital filters for the benefit of providing better equalization and providing an output signal with less distortion.

Regarding claim 3, Makivirta as modified by Azima discloses wherein the transfer function is formed by FIR (finite impulse response) filters, whose filter coefficients are derived from the inverse frequency curve (Makivirta, column 5, lines 20-25). It is implicit that the coefficients are derived as claimed. All elements of claim 3 are comprehended by the rejection of claim 2.

Regarding claim 4,

All elements of **claim 6** are comprehended by the rejection of claim 5.

Regarding claims 8 and 10, Makivirta as modified by Azima discloses a filter that is equipped with a digital signal processor (Makivirta, column 5, lines 15-25, filter 4). All elements of claims 8 and 10 are comprehended by the rejection of claims 6 and 6 respectively.

5. **Claims 7,9,11 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Makivirta et al. (EP 0567 061) as applied to claim 4 above and Azima et al. (US Patent 6,198,831) as applied to claim 4 above in view of Smith (GB 2 265 519 A).

Regarding claims 7 and 9, Makivirta as modified by Azima fails to disclose that the filter device includes a sample and hold element connected via an analogue-to-digital converter to the digital filter, whose output is connected to a digital-to-analogue converter. Smith teaches of compensating for the non-linear responses of a flat panel

Art Unit: 2615

loudspeaker including a D/A and an A/D converter connected to a filtering means (digital format converter, Figure 5), a re-linearising device (Figures 5 and 6) and a memory (sample and hold element) connected as claimed (page 4, lines 8—19). It would have been obvious to modify Makivirta as modified by having the filter include a sample and hold element in order to re-scale the input signal in order to a displacement which is proportional to the input signal.

Regarding **claims 11 and 12**, Makivirta as modified by Azima discloses a filter that is equipped with a digital signal processor (Makivirta, column 5, lines 15-25, filter 4). All elements of claims 11 and 12 are comprehended by the rejection of claims 7 and 9 respectively.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 2615


extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 571-272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DEF


VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Application/Control Number: 10/030,870
Art Unit: 2615

Page 10